showed that the connective tissue diseases can be divided into two groups. In the first group, which includes lupus erythematosus and systemic sclerosis, antinuclear antibodies are frequently found in high titre, whereas in the second group, which includes polyarteritis nodosa, cutaneous vasculitis, and dermatomyositis, antinuclear antibodies are usually absent. The rat liver immuno-fluorescence test is thus useful in differential diagnosis and a positive result in an otherwise symptomless patient may also be useful in predicting the future development of a connective tissue disease.

The evidence against antinuclear antibodies having a pathogenic role in the aetiology of the connective tissue diseases is presented.

**Discussion**

**DR. BUCHANAN (Glasgow)** You mentioned that antinuclear antibody was increased in systemic sclerosis and Sjögren's syndrome, but is it not the 'speckled' type of antibody which is particularly increased?

**DR. ROWELL** This is a point that I thought somebody would bring up. We disagree with those who claim that the 'speckled' factor is almost exclusively confined to patients with systemic sclerosis or Raynaud's disease. In our experience both homogeneous and 'speckled' types of antinuclear factor are found in systemic sclerosis, Sjögren's syndrome, systemic lupus erythematosus, and other disorders. The type of antinuclear factor is not specific to any particular disease, although antinuclear antibody is seen most frequently in systemic sclerosis.

**DR. HILL (Stoke Mandeville)** Has there been any interchange of sera with antinuclear factors between workers?

**DR. ROWELL** Yes. The Medical Research Council has been instrumental in circulating sera for comparison. The patterns are reproducible but sometimes the estimations of titre have differed between laboratories.

**DR. GLYN (London)** Have any observations been made in ankylosing spondylitis?

**DR. ROWELL** Not to my knowledge.

**DR. BUCHANAN (Glasgow)** Your criterion of positivity refers to a titre of 1 in 16. When you find this in an otherwise asymptomatic patient, what significance do you attach to it? Could you tell me how many patients had these titres and over what period of time they were followed up?

**DR. ROWELL** This is a highly relevant question. I cannot tell you the total numbers of patients but serial observations have been made on many for over 10 years.

**Effect of Beta Particle Irradiation upon experimentally induced Chronic Inflammatory Arthritis. By F. W. S. WEBB (Royal Postgraduate Medical School, London)**

This report concerns the effect of radiation both upon normal rabbit synovial membrane and upon rabbit synovial membrane which was the seat of a chronic inflammatory process. The uptake of the resin colloid of radioactive Yttrium (Y⁰⁰) by rabbit synovium has already been reported (Webb, Lowe, and Bluestone, 1969).

The arthritis was produced by the injection of ovalbumin into the knee joint of a rabbit preimmunized with the ovalbumin in complete Freund's adjuvant so as to be in a state of delayed hypersensitivity (Dumonde and Glyn, 1962). The histological changes found in this type of arthritis resemble those seen in the synovial membrane in rheumatoid arthritis in man.

In rabbits, where this chronic inflammatory process had been in progress in both knees for 4 weeks, the resin colloid of Y⁰⁰ was then injected into one knee, and the histological changes at various intervals after irradiation were studied. Doses of radiation from 1,500 to 12,000 r were given, calculated as the average radiation dose to the maximum beta particle penetration of Y⁰⁰ of 11 mm.

Although the changes seen between 24 hrs and 14 days showed an intense acute inflammatory response in both the inflamed and normal membrane, recovery to a near normal histological appearance occurred within 4 weeks after irradiation, and in the inflamed membrane the chronic inflammatory process disappeared.

**References**


**Discussion**

**DR. GARDNER (London)** How much radioactive material was deposited in the regional lymph nodes?

**DR. WEBB** We could detect none by thin window Geiger tube scanning over the rabbit's spleen, liver, or groin lymph nodes. We have not done any autoradiographs of regional lymph nodes.

**DR. HILL (Stoke Mandeville)** When gold was used in a similar way it was found at some distance from the joint.

**DR. WEBB** Reports from Finland (Birkkunen, Krusius, and Heiskauen, 1967) show that colloidal radioactive gold diffuses from injected joints.

**DR. HILL (Stoke Mandeville)** Is yttrium better?

**DR. WEBB** There are no small particles, i.e. below 160 Å diameter, with the resin colloid of Y⁰⁰. Colloidal gold preparations used so far have a proportion of much smaller particles, which may explain the diffusion.

**DR. SCOTT (London)** We have scanned a number of patients receiving radioactive gold into one joint. There has been a small amount of radiation from iliac and para-aortic glands, and in one or two from the liver. I do not know how yttrium compares in the same situation.

**DR. WYKEHAM BALME (London)** I have been informed by my radiotherapy colleagues that the easiest way of inducing sarcoma is to irradiate the tissue after having inflamed it.

**DR. WEBB** I have not heard of this. It is certainly a possibility.
DR. HILL (Stoke Mandeville) Dr. Ansell told me that she has had no malignancy in her series.

DR. BRUCKNER (London) Could I answer Dr. Scott's question on intra-articular yttrium in the human situation. We have injected a tracer dose in ten patients and there has not been any appreciable spread of isotope beyond the knees.

DR. GARDNER (London) I do not see how you could say there has been no appreciable spread unless you have studied the tissues microscopically and not just relied on scanning.

DR. JEFFREY (Harrogate) What happened to the hyaline cartilage?

DR. WEBB The cartilage we have seen has been quite normal, and it is unlikely that it is irradiated. When we have examined synovial fluid 24 hours after injecting isotope, there is very little activity in the fluid. The colloidal particles are almost all taken up very rapidly. Like any other colloid, into the synovial membrane.

DR. HILL (Stoke Mandeville) What happens if the injection misses the joint?

DR. WEBB It would burn a hole somewhere. One makes absolutely certain that the needle is properly in the joint cavity.

DR. HILL (Stoke Mandeville) I am glad that nobody in this Society has talked about an irradiation synovectomy, and I hope we shall not hear this term used prematurely.

Reference